Innovative Sensor Technology
physical. chemical. biological.

P14 4051 Rapid 2 Thermo

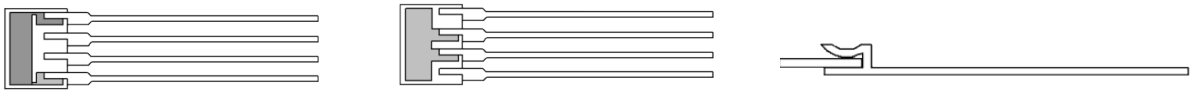
Capacitive Humidity Sensor

Optimal for weather balloons / radiosondes with on-chip heater and temperature sensor

Benefits & Characteristics

- Extraordinary fast response time: 3 x faster than P14 Rapid
- Temperature shock resistant
- Fast recovery time after condensation
- Robust against icing
- Humidity sensor with on-chip heater / temperature sensor
- Outstanding sensitivity
- High humidity stability
- Customer-specific sensor available upon request

Illustration[1)]



Front side: humidity sensor | Back side: Heater / temperature sensor | Side-view

1) For actual size, see mechanical dimensions

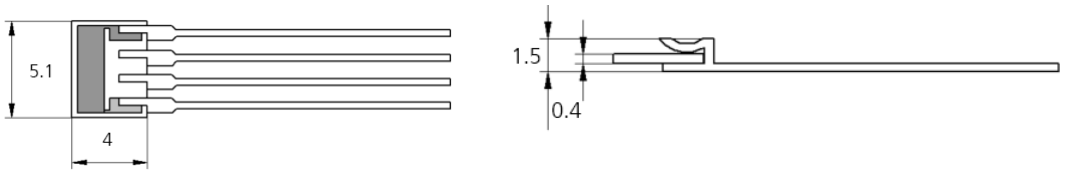
Technical Data

Dimensions (L x W x H / H2 in mm):	4.0 x 5.1 x 0.4 / 1.5
Operating humidity range:	0 % RH to 100 % RH (maximal dew point +85 °C)
Operating temperature range:	-80 °C to +150 °C
Heater / temperature sensor:*	Pt100 (100 Ω at 0 °C)
Heater/temperature sensor accuracy[2)]: 2) High accuracy temperature sensor on request	IEC60751 ±1%: ±(2.59 + 0.05 x |T|) °C |T| = absolute value of temperature in °C
Capacitance (C_{30}):*	650 pF ±150 pF (at 30 % RH and +23 °C)
Sensitivity (at C_{30} = 650 pF):	1 pF/% RH (15 % RH to 90 % RH)
Loss factor:	< 0.05 (at 23 °C, at 10 kHz, at 15 % RH to 90 % RH)
Linearity error:	< 1.5 % RH (15 % RH to 90 % RH at +23 °C)
Hysteresis:	< 1.5 % RH
Response time t_{63}:[3)]	0.3 s ± 0.2s (50 % RH to 0 % RH at +23 °C)
3) The response time is often measured for increasing humidity steps,whereas physics predicts that decreasing humidity leads to generally far longer response times for capacitive humidity sensors. IST AG thus measures response times always for decreasing humidity values, since this is the worst case.	
Measurement frequency range:	1 kHz to 100 kHz (recommended 10 kHz)
Maximal supply voltage:	< 12 V_{pp} AC
Signal form:	alternating signal without DC bias
Connection:*	CuP-SIL wire post-plated with Sn, 10 mm W x H: 0.5 x 0.25 mm with 1.27 mm pitch

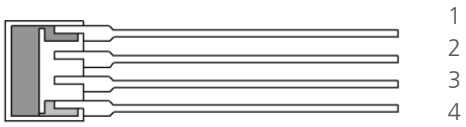
* Customer-specific alternatives available

The calibration of the sensor must be done 5 days after soldering at the earliest.

Mechanical Dimensions

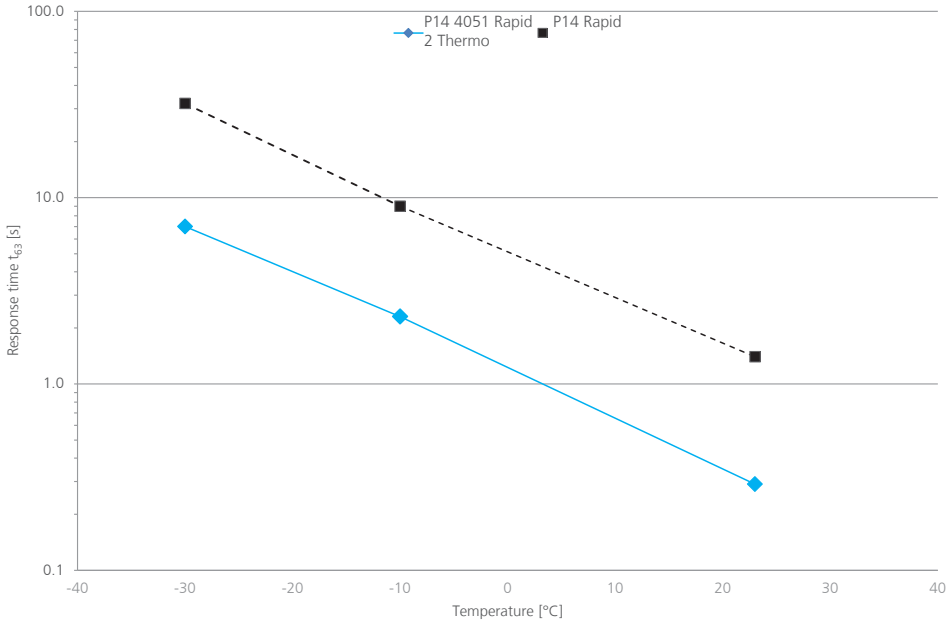


Pin assignment

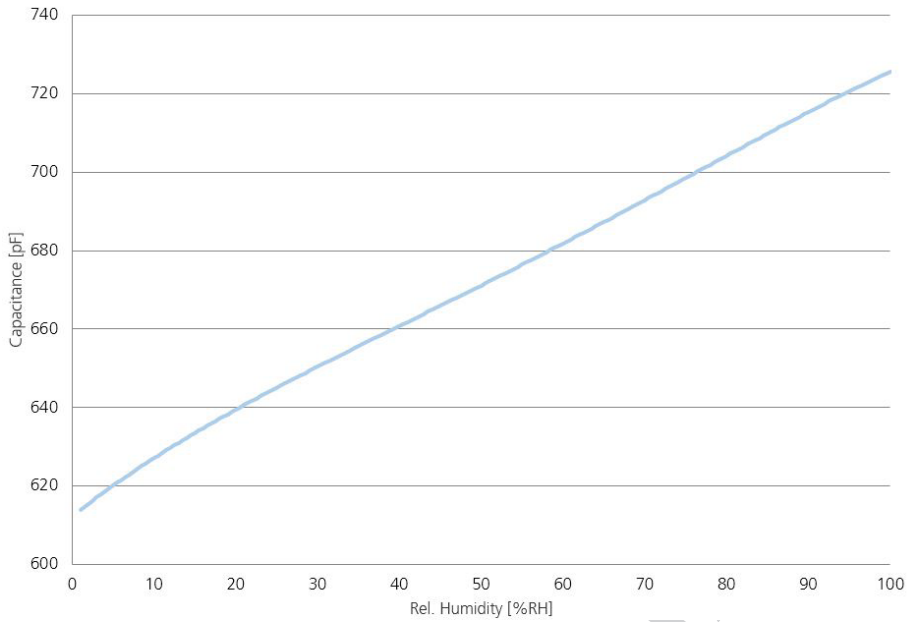


1	2	3	4
humidity sensor	temperature sensor	temperature sensor	humidity sensor

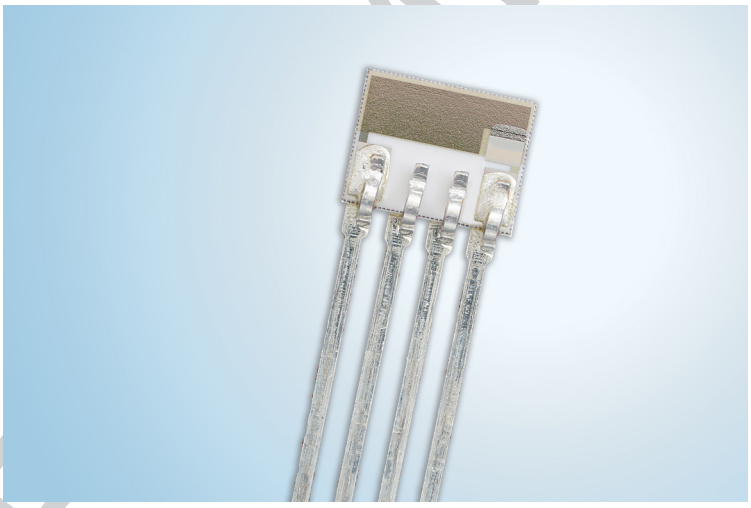
Response time (typical)



Characteristic Curve (typical)



Product Photo



Order Information - CuP-SIL wire post-plated with Sn, 10 mm

Nominal resistance: 100 Ω at 0 °C

	P14 4051 Rapid 2 Thermo
Order code	150269
Former order code	*340.00100*

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